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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/749,396

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Takeshi Yamamoto

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02/19/2008

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ALEXANDRIA, VA 22314

EXAMINER

CHEN, WEN YING PATTY

ART UNIT

PAPER NUMBER

2871

NOTIFICATION DATE

DELIVERY MODE

02/19/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|--|--|--|
| Office Action Summary | Application No. 10/749,396 | Applicant(s) YAMAMOTO, TAKESHI | |
| | Examiner WEN-YING Patty CHEN | Art Unit 2871 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's Amendment filed on Nov. 28, 2007 has been entered. Claims 1, 4 and 6 remain pending in the current application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et al. (US 6842207) in view of Fujimori et al. (US 2002/0075441) further in view of Yi et al. (US 2003/0104291) further in view of Inoue et al. (JP 2001-091727).

With respect to claims 1 (Amended) and 4: Nishida et al. disclose in Figure 12d a liquid crystal display apparatus configured to have a liquid crystal layer (element 4) interposed between a first substrate (element 11) and a second substrate (element 10), comprising:

a plurality of pixels (as shown in Figure 11b) which are disposed in a matrix in a display region that displays an image, the pixels including a first pixel with a first gap (pixel corresponding to element 6) for interposition of the liquid crystal layer between the first substrate and the second substrate, and a second pixel with a second gap (pixel corresponding to element 7) that is smaller than the first gap, and a third pixel with a third gap (pixel corresponding to element 8) that is smaller than the second gap, the first pixel including a first color filter layer (element 6) that has a first film thickness and mainly passes first color light, and the second pixel including a second color filter layer (element 7) that has a second film thickness, which is greater than the first film thickness, and mainly passes second color light, and the third pixel including a third color filter layer (element 8) that has a third film thickness, which is greater than the second film thickness, and mainly passes third color light, the first color light having a wavelength that is greater than a wavelength of the second color light, and the second color light having the wavelength that is greater than a wavelength of the third color light (Column 16, lines 15-30);

a spacer (element 25) for creating the third gap, the spacer being disposed only on the third pixel; and

a light shield layer (element 9) disposed in a picture-frame shape along a peripheral edge of the display region (Column 16, lines 18-20).

Nishida et al. failed to specifically disclose that the spacer disposed on the third pixel (blue pixel) is a columnar spacer and further that the columnar spacer and the light shield layer

Art Unit: 2871

are formed simultaneously using a negative-type photosensitive resin material by undergoing a single exposure process through a photo mask having a predetermined pattern.

However, Fujimori et al. disclose in Figure 1 of disposing a columnar spacer (element 10) only on the blue pixel and Yi et al. disclose in Figure 4 a liquid crystal display apparatus comprising of columnar spacer (element 43) such that the columnar spacer and a light shield layer (element 116) are formed simultaneously using a negative-type photosensitive resin material (Paragraphs 0037-0041) and further Inoue et al. teach that the simultaneously forming of spacers and light shield layers can be done with single exposure process (Paragraph 0039).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display apparatus as taught by Nishida et al. wherein the spacer used is a columnar spacer as taught by Fujimori et al., since Fujimori et al. teach that columnar spacers can be fabricated with various methods and the dimensions can be easily controlled (Paragraph 0029) and further to formed the columnar spacer simultaneously with the light shield layer using a negative-type photosensitive resin material as taught by Yi et al., since Yi et al. teach that the columnar spacer can be formed of the same material and at the same step as forming the black matrix, therefore, the fabrication process can be simplified and the cost of production can be reduced (Paragraph 0041) and further wherein the simultaneous forming of the spacer and the light shield layer comprises single exposure process as taught by Inoue et al., since Inoue et al. teach that the fabrication process can accordingly be further simplified (Paragraph 0039).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et al. (US 6842207), Fujimori et al. (US 2002/0075441), Yi et al. (US 2003/0104291) and Inoue et al. (JP 2001-091727) in view of Ochiai et al. (US 6768531).

Nishida et al., Fujimori et al., Yi et al. and Inoue et al. disclose all of the limitations set forth in claim 1, and Nishida et al. further disclose in Figures 11b and 12d that the first substrate includes scan lines (element 16) disposed in a row direction, signal lines (element 1) disposed in a column direction, switching elements (element 18) disposed near intersections of the scan lines and the signal lines, and pixel electrodes (element 3) that are connected to the switching elements and are disposed in a matrix.

All failed to disclose that the color filter layers and the columnar spacer are formed on the first substrate.

However, Ochiai et al. disclose in Figure 10 a liquid crystal display apparatus comprising a first substrate (element SUB1), which is the active matrix substrate that includes the color filter layers (element FIL) and the columnar spacer (element SUP).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display apparatus as taught by Nishida et al., Fujimori et al., Yi et al. and Inoue et al. wherein the color filter layers and the columnar spacer are formed on the active matrix substrate as taught by Ochiai et al., since Ochiai et al. teach that by forming the color filter layers on the thin film array thus act as a protection film, which helps to prevent the deterioration of the characteristics of the TFT (Column 10, lines 8-29).

Response to Arguments

Applicant's arguments filed on 11/28/07 have been fully considered but they are not persuasive.

Applicant argues, by citing Paragraphs 0025, 0030 and 0033 that Inoue et al. (JP 2001-091727) disclose a multiple exposure process using three photo masks for forming the light-shielding film and the spacer (see Page 5 of arguments), thus claiming that Inoue et al. is a teaching away from the claimed single exposure process.

However, Applicant's argument is not found persuasive. Even though in the embodiments disclosed by Inoue et al. use multiple exposures, however, Inoue et al. clearly teach in Paragraph 0039 that a one-shot exposure can further be implemented when forming the light-shielding film and the spacer so as to simplify the manufacturing process. Consequently, Inoue et al. does not explicitly teach away from using a single exposure process. Furthermore, Inoue et al. was relied upon solely for teaching the simplified exposure process; the limitation of forming the spacer on the color filter layer was disclosed by Fujimori et al. and Yi et al.

The rejections of the claims are therefore maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2871

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WEN-YING Patty CHEN whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W. Patty Chen
Examiner
Art Unit 2871

Application/Control Number: 10/749,396
Art Unit: 2871

Page 8

/WPC/
2/12/08

/Andrew Schechter/
Primary Examiner, Art Unit 2871